

REMARKS

DISCUSSION OF DRAWINGS

Applicants submit herewith amended Figure 3 in which the record output for the atrial channel has been corrected to illustrate no capture at a 1.6 volt pacing volt in accordance with the specification on page 18, lines 27-30. Applicants request acceptance of amended Figure 3 to correct an inadvertent error and because no substantive new matter has been added.

DISCUSSION OF CLAIMS

In the Office Action, claims 1-8, 10-12 and 16-19 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 4,817,605 to Sholder.

In the Office Action, claims 1-22 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,891,178 to Mann et al.

Following is a discussion of the patentability of each of the pending claims.

Independent Claim 1

Claim 1 recites a system that performs automatic capture verification. The system comprises an autocapture means that detects the presence or absence of captured cardiac events in response to applied pacing pulses (i.e., it differentiates between successful paced events and unsuccessful (loss-of-capture) events). The system also comprises a control means that generates a visual representation of captured and loss-of-captured events, where the visual representation is based on whether each event is a captured cardiac event or a loss-of-capture event. Display means are provided to display the visual representation to a medical practitioner.

Thus, the claimed system determines whether each pacing pulse achieved capture or resulted in a loss of capture, and generates a corresponding visual representation based on that determination. In other words, Applicants' claimed invention distinguishes between two different types of paced events (capture events and loss-of-capture events) and identifies each event as one or the other.

As an example of the visual representation, Figure 3 depicts one embodiment where, for each pacing pulse delivered to the patient's heart, the word "CAPTURE" or "NO CAPTURE" is displayed with the ECG data, where "CAPTURE" signifies the determination by the system that the pacing pulse achieved capture, and "NO CAPTURE" signifies the determination by the system that the pacing pulse failed to achieve capture. Thus, the visual representation claimed by Applicants is other than ECG data, and furthermore is based on a determination made by the system as to whether a pacing pulse captured the heart chamber or not.

The Sholder reference discloses a system for determining capture in response to stimulus by comparing the time interval between a stimulation pulse and a respective paced event or a sensed event (intrinsic). In particular, the time intervals between atrial stimulation pulses and atrial events are constant with atrial capture. In the event of variable time intervals, capture has not occurred. Thus, a medical practitioner is able to determine capture or loss-of-capture by comparing several time intervals.

For the same reasons discussed previously with regards to Bennett et al. in a previous Response, the Sholder reference also does not disclose or suggest differentiating between successful paced events and loss-of-capture events, nor does the Sholder reference provide a visual representation that uniquely identifies loss-of-capture events. Rather, all events are most likely identified as paced or sensed events. As such, in order to determine capture or loss-of-capture, a medical practitioner is required to identify the time interval for each event and determine whether they are constant or variable. Furthermore, Sholder fails to disclose whether a loss-of-capture event is labeled as a paced event or a sensed event because Sholder most likely discloses only two markers, namely sensed events and paced events. Loss-of-capture events are either improperly combined with successful captured events, or with non-paced, intrinsic events.

It is further noted that an EGM in accordance with Sholder most likely does not include markers such as "D, D', and D" as illustrated in Figures 4A and 4B to identify the time interval between a stimulation pulse and a respective captured event or a sensed event (intrinsic). These symbols were most likely included in Figures 4A and 4B to more clearly describe the invention of Sholder.

The Mann et al. reference also analyzes the stability and lengthening of times intervals as an indication of capture or loss-of-capture. The Mann et al. reference does not disclose or suggest differentiating between successful paced events and loss-of-capture events, nor does the Mann et al. reference provide a visual representation that uniquely identifies loss-of-capture events. Rather, all events are most likely identified as paced or sensed events. As such, in order to determine capture or loss-of-capture, a medical practitioner is required to compare the time interval for each event with prior events. Furthermore, Mann et al. fail to disclose whether a loss-of-capture event is labeled as a paced event or a sensed event because Mann et al. discloses only two markers, namely sensed events and paced events (see column 15, lines 45-52). Loss-of-capture-events are either improperly combined with successful captured events, or with non-paced, intrinsic events.

Accordingly, it is respectfully submitted that claim 1 is in condition for allowance.

Dependent Claims 2-14

Claims 2-14 depend from claim 1 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 15

For at least the same reasons discussed above with regards to claim 1, it is respectfully submitted that claim 15 is in condition for allowance.

Independent Claim 16

For at least the same reasons discussed above with regards to claim 1, it is respectfully submitted that claim 16 is in condition for allowance

Dependent Claims 17-21

Claims 17-21 depend from claim 16 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 22

For at least the same reasons discussed above in regards to claim 1, it is respectfully submitted that claim 22 is in condition for allowance.

CONCLUSION

In light of the above claim amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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